AMENDMENTS TO THE CLAIMS

Claims 1-8 (Canceled)

9. (Currently Amended) A signal transmission apparatus comprising:

a modulator operable to assign a data stream of layer A and a data stream of layer B to a respective constellation in a signal space to produce a modulated signal of layer A and a modulated signal of layer B,

~~an inverse Fast Fourier Transformer~~ a converter operable to convert said modulated signal of layer A and said modulated signal of layer B into a ~~transmission~~ converted signal in layer A ~~on a time axis~~ and a ~~transmission~~ converted signal in layer B ~~on a time axis~~ respectively, according to orthogonal frequency division multiplexing, wherein each ~~transmission~~ converted signal ~~comprises~~ has an effective symbol signal and a guard interval signal, and

a transmitter operable to transmit said ~~transmission~~ converted signals, ~~and~~

wherein the period of said guard interval signal in layer A is larger than the period of said guard interval signal in layer B.

10. (Previously Presented) A signal transmission apparatus according to claim 9, wherein a source divides into said data stream of layer A and said data stream of layer B.

11. (Currently Amended) A signal receiving apparatus comprising:

a ~~modulation~~ received signal in layer A, and

a ~~modulation~~ received signal in layer B,

a ~~Fast Fourier Transformer~~ converter operable to convert said ~~modulation~~ received signal in layer A and said ~~modulation~~ received signal in layer B into a converted signal ~~on a frequency axis~~ in layer A and a converted signal ~~on a frequency axis~~ in layer B, respectively, according to orthogonal frequency division multiplexing, wherein each received signal has an effective symbol signal and a guard interval signal, and

a demodulator operable to demodulate said converted signal in layer A and said converted signal in layer B ~~into~~ to produce a data stream of layer A and a data stream of layer B, ~~and~~

wherein the period of said guard interval signal in layer A is larger than the period of said guard interval signal in layer B.

12. (Currently Amended) A signal transmission system comprising a signal transmission apparatus and a signal receiving apparatus,

said signal transmission apparatus comprising;

a modulator operable to assign a data stream of layer A and a data stream of layer B to a respective constellation in a signal space to produce a modulated signal of layer A and a modulated signal of layer B,

~~an inverse Fast Fourier Transformer~~ a frequency-time converter operable to convert said modulated signal of layer A and said modulated signal of layer B into a ~~transmission~~ frequency-time converted signal in layer A ~~on a time axis~~ and a ~~transmission~~ frequency-time converted signal in layer B ~~on a time axis~~ respectively, according to orthogonal frequency division multiplexing, wherein each ~~transmission~~ frequency-time converted signal ~~comprises~~ has an effective symbol signal and a guard interval signal, and

a transmitter operable to transmit said ~~transmission~~ frequency-time converted signal in layer A and said ~~transmission~~ frequency-time converted signal in layer B, and

said signal receiving apparatus comprising;

a ~~Fast Fourier Transformer~~ time-frequency converter operable to convert said ~~transmission~~ frequency-time converted signal in layer A and said ~~transmission~~ frequency-time converted signal in layer B into a time-frequency converted signal ~~on a frequency axis~~ in layer A and a time-frequency converted signal ~~on a frequency axis~~ in layer B, respectively, according to orthogonal frequency division multiplexing, and

a demodulator operable to demodulate said time-frequency converted signal in layer A and said time-frequency converted signal in layer B ~~into a~~ to produce said data stream of layer A and ~~a~~ said data stream of layer B, ~~and~~

wherein the period of said guard interval signal in layer A is larger than the period of said guard interval signal in layer B.

13. (Previously Presented) A signal transmission system according to claim 12, wherein a source divides into said data stream of layer A and said data stream of layer B.

14. (Currently Amended) A signal transmission method comprising:

assigning a data stream of layer A and a data stream of layer B to a respective constellation in a signal space to produce a modulated signal of layer A and a modulated signal of layer B,

converting said modulated signal of layer A and said modulated signal of layer B into ~~an IFFT~~ a converted signal in layer A ~~on a time axis~~ and ~~an IFFT~~ a converted signal in layer B ~~on a time axis~~ respectively, according to orthogonal frequency division multiplexing, wherein each ~~IFFT~~ converted signal comprises an effective symbol signal and a guard interval signal, and

transmitting said ~~IFFT~~ converted signals, ~~and~~

wherein the period of said guard interval signal in layer A is larger than the period of said guard interval signal in layer B.

15. (Previously Presented) A signal transmission method according to claim 14, wherein a source divides into said data stream of layer A and said data stream of layer B.

16. (Currently Amended) A signal receiving method comprising:

a ~~modulation~~ received signal in layer A, and

a ~~modulation~~ received signal in layer B,

converting said ~~modulation~~ received signal in layer A and said ~~modulation~~ received signal in layer B into a ~~FFT~~ converted signal ~~on a frequency axis~~ in layer A and a ~~FFT~~ converted signal ~~on a frequency axis~~ in layer B, respectively, according to orthogonal frequency division multiplexing, wherein each converted signal has an effective symbol signal and a guard interval signal, and

demodulating said ~~FFT~~ converted signal in layer A and said ~~FFT~~ converted signal in layer B into a data stream of layer A and a data stream of layer B, ~~and~~

wherein the period of said guard interval signal in layer A is larger than the period of said guard interval signal in layer B.

17. (Currently Amended) A signal transmission and receiving method comprising a signal transmission method and a signal receiving method,

said signal transmission method comprising;

assigning a data stream of layer A and a data stream of layer B to a respective constellation in a signal space to produce a modulated signal of layer A and a modulated signal of layer B,

frequency-time converting said modulated signal of layer A and said modulated signal of layer B into ~~an IFFT~~ a frequency-time converted signal in layer A ~~on a time axis~~ and ~~an IFFT~~ a frequency-time converted signal in layer B ~~on a time axis~~ respectively, according to orthogonal frequency division multiplexing, wherein each ~~transmission~~ frequency-time converted signal ~~comprises~~ has an effective symbol signal and a guard interval signal, and

transmitting said ~~IFFT~~ frequency-time converted signal in layer A and said ~~IFFT~~ frequency-time converted signal in layer B, and

said signal receiving apparatus comprising;

time-frequency converting said ~~IFFT~~ frequency-time converted signal in layer A and said ~~IFFT~~ frequency-time converted signal in layer B into a ~~FFT~~ time-frequency converted signal ~~on a frequency axis~~ in layer A and a ~~FFT~~ time-frequency converted signal ~~on a frequency axis~~ in layer B, respectively, according to orthogonal frequency division multiplexing, and

demodulating said ~~FFT~~ time-frequency converted signal in layer A and said ~~FFT~~ time-frequency converted signal in layer B ~~into a~~ to produce said data stream of layer A and ~~a~~ said data stream of layer B, ~~and~~

wherein the period of said guard interval signal in layer A is larger than the period of said guard interval signal in layer B.

18. (Previously Presented) A signal transmission method according to claim 17, wherein a source divides into said data stream of layer A and said data stream of layer B.

19. (New) A signal transmission apparatus according to claim 9, wherein the converter is an inverse Fast Fourier transformer.

20. (New) A signal transmission apparatus according to claim 11, wherein the converter is a Fast Fourier transformer.

21. (New) A signal transmission apparatus according to claim 12, wherein the frequency-time converter is an inverse Fast Fourier transformer, and the time-frequency converter is a Fast Fourier transformer.